95 Auscultation of the Liver

JOSEPH E. HARDISON

Definition

Diseases of the liver may result in the production of auscultatory phenomena if: (1) portal vein hypertension is produced, (2) arterial blood flow is increased or partially obstructed, or (3) the liver is involved by inflammatory processes. These conditions result in the production of an abdominal venous hum, an hepatic arterial bruit, or an hepatic friction rub.

Technique

The patient is examined in the supine position.

Abdominal Venous Hum

The abdomen is carefully inspected for the presence of dilated superficial veins or a caput medusae (varicose veins radiating from the umbilicus). If present, these are lightly palpated for the presence of a thrill. If a thrill is present, a venous hum is present. If the thrill is absent, a venous hum may or may not be present. Finally, a hum may be present when dilated veins are not seen. The hum is listened for by using light pressure with bell or diaphragm of the stethoscope. If detected, the hum can be obliterated by increasing the pressure of the stethoscope or by compressing the veins with the free hand. The abdominal venous hum, like the cervical venous hum, is a continuous roaring or whining noise, which may be localized to the abdomen or may radiate into the chest. Unlike the cervical venous hum, the response of the abdominal venous hum to change in position, respiration, cardiac cycle, or the Valsalva maneuver is unpredictable. For instance, the Valsalva maneuver obliterates the cervical venous hum but may increase or decrease the abdominal venous hum. It is essential that the abdominal venous hum not be confused with respiratory noises and bowel sounds. The problem of respiratory noises is solved by having the patient hold his breath. Bowel sounds can be quite confusing, but usually can be distinguished by their tinkling, changing, and intermittent qualities.

Hepatic Arterial Bruit

The abdomen is examined by palpation and percussion to determine liver size, location, and configuration. The liver is then auscultated using moderately firm pressure with either the bell or the diaphragm of the stethoscope. An arterial bruit may be confined to systole or be systolic with extension into diastole or be continuous. There are many causes of abdominal arterial bruits, and it is difficult, if not impossible, to be sure the bruit is coming from the liver. However, if the liver is large and the stethoscope is placed directly over it and the bruit is not heard at locations away from the liver, the odds are greatly in favor of the bruit coming from the arterial blood flow to or within the liver.

Hepatic Friction Rub

The patient is examined for size, location, and configuration of the liver. Light pressure of the examining hand is used to feel a thrill over the liver which is related to respiration. If felt, a friction rub will be heard, but a rub more often is heard and not felt. A hepatic friction rub sounds close to the ear and is very similar to the sound produced by forcibly rubbing the thumb and forefinger together close to the ear. If the rub is being produced by movement of the liver, the rub will usually be confined to the abdomen and will not radiate into the chest. Likewise a friction rub caused by movement of the pleura will not be heard over the liver.

Basic Science

Abdominal Venous Hum

The abdominal venous hum results from conditions which cause portal vein hypertension. Collateral venous channels are opened between the portal and the systemic venous channels, and the resultant flow of blood from the high-pressure portal system to the lower pressure systemic system in some way results in the hum. If the patient has portal hypertension and abdominal venous hum resulting from a congenitally atrophic liver and patent umbilical vein, the condition is called Cruveilhier–Baumgarten disease. If the portal hypertension and venous hum result from cirrhosis of the liver or other causes, the condition is known as the Cruveilhier–Baumgarten syndrome. The number of reported cases in which cirrhosis is absent is very small.

Hepatic Arterial Bruit

Hepatic arterial bruits result from conditions which cause increased arterial flow to the liver, arteriovenous shunting in the liver, or partial obstruction to arterial flow. Primary and metastatic tumors of the liver receive their blood supply almost exclusively from the hepatic artery, and arterial flow in these conditions is increased. Alcoholic hepatitis and cirrhosis of the liver are associated with increased arterial blood flow to the liver and intrahepatic arteriovenous shunts. Arterial bruits have been described in all of these conditions. Cancer and cirrhosis in addition to increased flow may cause bruits by partial obstruction of arterial flow by regenerating or cancerous nodules.

Hepatic Friction Rub

The liver because of its dual blood supply of hepatic artery and portal vein rarely develops an infarction large enough to produce a rub. Therefore, most hepatic rubs result from inflammation of the liver or contiguous structures, the commonest causes being infection and cancer, either primary or metastatic.

Clinical Significance

Abdominal Venous Hum

The presence of an abdominal venous hum is virtually diagnostic of portal vein hypertension, which statistically is secondary to cirrhosis of the liver. If the venous hum radiates or is confined to the chest, it may be mistaken for or obscure a murmur of cardiac origin.

Hepatic Arterial Bruit

A hepatic bruit is indicative of alcoholic hepatitis or primary or metastatic cancer. Though reported to occur in cirrhosis of the liver, it is rare without associated alcoholic hepatitis. An abdominal venous hum and a hepatic arterial bruit in the same patient would suggest cirrhosis of the liver with alcoholic hepatitis or cancer.

Hepatic Friction Rub

A friction rub over the liver is indicative of cancer in the liver with inflammatory changes or infection in or adjacent to the liver. If detected in a young woman, the examiner should consider gonococcal peritonitis of the upper abdomen (Fitz–Hugh–Curtis syndrome). A hepatic rub and bruit in the same patient usually indicates cancer in the liver. A hepatic rub, bruit, and abdominal venous hum would suggest that a patient with cirrhosis had developed a hepatoma.

References

Babb RR. Auscultation of the abdomen with reference to vascular sounds. Am J Digest Dis 1973;18(12):1085–86.

Castell DO, Frank BB: Abdominal examination: role of percussion and auscultation. Postgrad Med 1977;62(6):131–34.

Cheng TO, Sutton GC, Sutton DC. Cruveilhier–Baumgarten syndrome. Am J Med 1954;17:143–50.

Clain D, Wartnaby K, Sherlock S. Abdominal arterial murmurs in liver disease. Lancet 1966;2:516–19.

Fred HL, Brown GR. The hepatic friction rub. New Engl J Med 1962;266:554–55.

Hardison JE. Venous hum of the Cruveilhier–Baumgarten syndrome: response to the Valsalva maneuver. Arch Intern Med 1977;137(11):1623–24.

Motoki T, Havashi T, Katoh Y, Sakamoto T, Tekeda T, Murao S. Hepatic bruits in malignant liver tumors. Am J Gastroenterol 1979;71(6):582–86.

Sherman HI, Hardison JE. The importance of a coexistent hepatic rub and bruit. A clue to the diagnosis of cancer in the liver. JAMA 1979;241(14):1495.